



UNITED STATES NAVY

# MEDICAL NEWS LETTER

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## TABLE OF CONTENTS

Historical Fund of Navy Medical Department.....	2
Toll of Motor-Vehicle Accidents .....	3
Cardiac Arrest During Urologic Procedures .....	5
Aging of Arteries in Relation to Hypertension.....	8
Diagnostic Significance of Pleural Effusion .....	11
Ochronosis .....	13
Gallstones in Young Women.....	14
Portacaval Shunts for Portal Hypertension .....	16
Wasp Venom Allergy and Immunity .....	17
Appointment of Rear Admiral Kern .....	19
IN MEMORIAM .....	19
From the Note Book .....	20
Nationwide Need for Epidemiologists .....	22
Board Certifications .....	24
NR Preventive Medicine Course (BuMed Notice 1550) .....	26
Utilities and Miscellaneous Units of Measure (BuMed Notice 11011) ....	26
Travel of Patients, Expenditure Account of (BuMed Notice 7301) .....	27

### DENTAL SECTION

Anniversary of Dental Corps.....	27	Dental Service Report.....	28
"Operation Build-Up".....	28		

### RESERVE SECTION

Package Curriculum .....	30	Two HC Divisions Established..	31
Reworking Course Assignments.....	31		

### PREVENTIVE MEDICINE SECTION

Driver Behavior and Accidents..	32	Experience with Isoniazid .....	34
Noise Reduction .....	33	TB Pleurisy with Effusion .....	36
Helminthic Diseases in the U. S.....	39		

HISTORICAL FUND  
of the  
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

Treasurer, N. M. D. Historical Fund  
Bureau of Medicine and Surgery (Code 23)  
Department of the Navy  
Washington 25, D. C.

Committee

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### The Toll of Motor-Vehicle Accidents

During 1956, a total of 7800 navymen and marines were admitted to medical facilities as a result of injuries received in motor-vehicle accidents. These motor-vehicle-accident victims lost 328,500 man-days because of their injuries. Sick days resulting from motor-vehicle accidents, however, represent only a part of the serious problem—approximately 1000 members of the Navy and Marine Corps were lost permanently through death and disabling injury. When these figures are interpreted in terms of human suffering and of losses of persons with special abilities, training, and skills who were performing essential functions in many strategic positions, it is easy to understand their significance and the far-reaching tragedy to the Navy and to the Nation.

For several years, the injury and traffic fatality rates in the Navy and in the civilian population were descending slowly. This improving trend led to a feeling of complacency and, in general, spotty safety campaigns and traffic-law enforcement. In the last 2 years, the favorable picture has been reversed. In the Navy, the motor-vehicle injury rate increased by 12% since 1954 and motor-vehicle death rates increased by more than one third. The motor vehicle has become the "Number One" public enemy—the most urgent morbidity problem in the Navy and Marine Corps. In 1956, motor vehicle accidents accounted for 8% of all time lost for medical reasons and for 38% of the Navy's mortality.

The importance of prevention of motor-vehicle accidents is obvious. The problems, however, are multiplex and take many tangents. Medical Department representatives and Navy safety groups have undertaken several studies and are cooperating with civilian agencies and committees in attempting to reduce the toll from motor-vehicle accidents. More specifically, the Navy has stressed the development of visual and auditory means in attempting to impress her civilian and military aides with the seriousness of the issues. Also, highways are being patrolled by the military; leave and liberty hours are being altered to permit more daylight driving; in certain areas, the use of privately owned vehicles is being curtailed during hours of work to reduce the numbers of vehicles on the highways during peak periods; some commands have restricted the distances which may be driven during liberty. These measures apparently have helped in some areas, while in other sections the program must be intensified or altered.

Many groups and organizations, both in the Navy and elsewhere, are concerned with the causes of motor-vehicle accidents. Vehicle manufacturers are becoming more conscious of safety in body design and in making devices to reduce serious trauma; more attention is also being given to highway design and construction.

Of the many other factors involved in motor-vehicle accidents, the human factor is being given more and more attention. Navy and Marine

Corps personnel oftentimes take long trips to be with friends and families on weekend liberty. The effect of fatigue after prolonged driving is well known—drivers become sleepy and reflexes are slowed so that rapidly changing situations become difficult to cope with. The naval population is primarily a young group. The average age of the enlisted being in the early 20's (officers are about 10 years older). The older men are usually married and live with their families within daily commuting distance of their duty assignments. Therefore, those who drive long distances on rather frequent weekend intervals are generally the unmarried younger sailors or marines and the younger drivers have higher accident rates.

The figures given in this article indicate the gravity of the motor-vehicle problem to the Navy Department. A continued cooperative effort is required, particularly in those population areas where the problem appears to be most acute.

During 1956, the fatality and injury toll as a result of motor-vehicle accidents among Navy and Marine Corps personnel increased for the second consecutive year. Admissions per 100,000 average strength were 883. Deaths per 100,000 average strength were 71. In addition, the injuries seem to have been more serious in 1956. The proportion of fatal accidents also increased. One died out of each 12 injured in motor-vehicle accidents.

In 1955, 1 died out of each 13 injured. In 1954, the ratio was 1 death for each 15 injured. Noneffectiveness also rose slightly. Those who were injured remained on the sicklist 1 day longer—42 days per case as compared with 41 days per case in 1955—and 102 out of each 100,000 were noneffective each day because of motor-vehicle accidents. This compares with 99 per 100,000 in 1955 and 95 in 1954.

While Marine Corps personnel accounted for only 3 out of 10 injuries and deaths, the admission rate was nearly 50% higher for Marine Corps than for Navy personnel and the Marine Corps motor-vehicle death rate was more than two-fifths higher.

Admission rate for officers increased in 1956; the enlisted rate was practically unchanged. Death rates, however, increased for all personnel. Over half of the admissions and fatalities among Navy and Marine Corps personnel occurred among those in the 20 - 24 year age group. Occupants of passenger automobiles accounted for almost four-fifths of the injuries and for about nine-tenths of the fatalities.

Motorcycle accidents, ranking second in number, were responsible for 9% of the motor-vehicle injuries and 6% of the deaths. Military type vehicle accounted for 5% of the motor-vehicle admissions and 4% of the fatalities. Marine Corps personnel were injured more frequently in military vehicles than navymen.

About one-third of the admitting diagnoses were bone fractures with 1 out of 8 involving the skull and spine. Another two-fifths were almost equally distributed between cuts (lacerated and incised wounds) and bruises



(contusions, abrasions, et cetera) with a large proportion involving the head, face, and neck.

The "long weekend" periods (Saturday through Monday) when vehicular traffic is at its peak and personnel travel longer distances than usual to be with their friends and relatives account for more than their proportionate share of admissions due to motor-vehicle injuries. A high proportion of the motor-vehicle injuries were incurred off duty. These off-duty accidents were responsible for 88% of the injuries, 93% of accumulated sick days, and 94% of the fatalities.

Motor-vehicle accidents in 1956 will cost the Government around 36 million dollars—over a million dollars more than the cost of such accidents in 1955. Fatal accidents account for nearly three-fifths of this sum.

(MedStatDiv, BuMed)

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### Cardiac Arrest During Urologic Procedures

Cardiac arrest, by definition, is the unexpected sudden onset of cessation of cardiac output. As a surgical emergency, it takes precedence over all others because death or permanent irreparable cerebral damage ensues if the brain is deprived of adequate oxygenation for a period exceeding approximately 4 minutes. Resuscitation beyond this time limit can scarcely be deemed successful even if the patient survives because almost without exception this is a decerebrate vegetative existence.

This problem is not new; rather it is a problem which has existed since shortly after the first use of general anesthesia and is being attacked continuously with increased vigor in research, in practice, and in publicity. Hosler's calculation of 10,000 cardiac arrests occurring annually in the United States gives added impetus to the search for more efficient methods of prevention and recognition and more successful treatment of this catastrophe. The incidence of cardiac arrest is believed by some investigators to be increasing. Briggs, et al., in a series covering 189,815 anesthetic and surgical procedures from 1925 to 1954, reported an over all incidence of operating room deaths of 1:1091 and of cardiac arrests of 1:1406. The incidence in the first two decades was 1:2458 and from 1945 to 1954, a total incidence of 1:1038. They conclude that cardiac arrest is the major single cause of death in the operating room and that there has been an absolute increase in the incidence of cardiac arrest in recent years. The incidence of cardiac arrest and recovery rate from reports by several authors are shown by table.

The etiologic factors of prime importance are hypoxia (lack of oxygen) and hypercapnea (excess of carbon dioxide). Several excellent reports by experimental investigators have shown this to be true.

What is the significance of these findings in relation to cardiac arrest in patients in the urologic service? Chronic cardiovascular disease with its attendant decreased vital capacity can result in unrecognized chronic hypoxia of varying degrees in the preoperative state. Toxemia and fever, such as occur with severe urinary tract infections, anemia, and inanition are also factors which can produce a subclinical hypoxia. Patients with such problems, when subjected to the stress of surgery, are likely prospects for cardiac arrest and should be so evaluated preoperatively. It is logical to assume that the individual physician responsible for the management of genitourinary problems must be cognizant of the patient's cardio-vascular-respiratory status as well as his urological status. Certain preoperative determinations, such as vital capacity, venous pressure, and circulation time are helpful. Determination of the patient's serum potassium, sodium, chloride, and carbon dioxide levels prior to surgery provides additional information. Arterial oxygen saturation when indicated can be obtained. Predisposing factors also worth considering are: (1) Preoperative medication. Large doses of narcotics with their effect of respiratory depression should be avoided because they may further impair ventilation in an individual possibly having chronic hypoxia of some degree. (2) Atropine in sufficient amount and in proper time relationship to the actual anesthetic procedure is an aid in controlling abnormal vagal responses and also diminishes bronchial secretions. (3) Position of the patient during procedure. Positions which may interfere with adequate oxygenation should be avoided or if such position is absolutely necessary particular attention must be given to insure proper obstruction-free respiratory exchange by endotracheal intubation.

Bradycardia and falling blood pressure in an anesthetized individual with a previously normal pulse and blood pressure are signs of progressive asphyxia and impending cardiac arrest. Immediate check must be made to insure that oxygenation is adequate and that respiratory excursion is sufficient to correct or prevent hypercapnea. Cardiac arrest is present when blood pressure and pulse are unobtainable. From the moment this occurs, the patient has only four critical minutes if he is to be retrieved with any significant degree of success. Time should not be wasted by futile motions looking for stethoscopes to listen for heartbeat, searching for medications and the equipment to inject them into the heart, and by calling for more adequately trained personnel to perform thoracotomy and cardiac massage. As time flies, the neuron dies. The responsibility rests with the surgeon or the individual most capable to perform thoracotomy and cardiac massage. Urologic surgeons must be ever aware of their duty in this regard and must be prepared to deal with this situation promptly and intelligently. Provided sterile thoracotomy instruments are present, they are used, but all that is absolutely essential is a scalpel. Skin asepsis is a matter of little importance at this time. An incision is made medial to lateral in the left fourth or fifth interspace with several quick strokes of the blade. This approach



permits more efficient cardiac massage and is considered vastly superior to the transdiaphragmatic route. Laceration of the lung can be avoided by slipping one's fingers in the pleural space and retracting the lung medially. The costal cartilages above and below are incised to permit ready access to the heart; a rib spreader, if available, facilitates this and provides for more efficient cardiac massage. The heart is seen to be motionless, contracting feebly, or fibrillating, giving a previously well described sensation of a "bag of worms" in the hand. Massage at the rate of 40 to 60 per minute, or even higher, is begun. However, higher rates are difficult for the operator to maintain for any length of time. Initially, the pericardium is not opened. Massage, to be effective, is best done with the apex of the heart lying in the palm of the hand. The heart is compressed firmly and rapidly to expel the blood and is allowed to fill during relaxation of the fingers. Care must be exercised to avoid laceration of the heart with the finger tips. Large hearts can be more successfully massaged between the palms of both hands. During periodic momentary rest periods, the heart can be observed for evidence of activity.

If fibrillation is present, massage is continued for a few minutes until the color of the myocardium is improved because the anoxic myocardium tolerates electric shock poorly and further damage could result. When the color of the myocardium has improved, defibrillation is attempted by use of electric shock techniques, such as those described by Wiggers. This form of therapy was developed following observation that passage of strong electric current through the heart produces simultaneous contraction of all the myocardial fibers. Following this massive contraction, the heart is in standstill while relaxation follows. Spontaneous beat returns with regular rhythm after the period of asystole. Single shocks delivered by means of a commercial defibrillator are used.

In conjunction with the surgeon's efforts, the anesthesiologist attempts correction of asphyxia by administration of 100% oxygen via endotracheal tube or, if not intubated, by a closed mask until intubation can be accomplished, and provides artificial respiration sufficient to furnish adequate respiratory exchange. Rapid whole blood replacement to correct circulatory volume deficit is useful. However, care should be exercised to avoid overloading the circulatory system.

Stimulants to anoxic myocardium should be avoided because they are of questionable value and may produce additional damage. However, once the condition of the myocardium has improved by massage, certain drugs may be of value. These solutions are injected directly into the chamber of the left ventricle so that rapid entrance to the coronary circulation is obtained. If asystole is present, 1 cc. of a solution containing 1 cc. of 1:1000 epinephrine diluted to 10 cc. of normal saline is used. This may be repeated in 4 to 5 minutes. If this does not produce a satisfactory response, 2 to 4 cc. of 10% solution of calcium chloride may be used.

If ventricular fibrillation is present, the use of epinephrine and/or calcium chloride is to be avoided because this may make the fibrillation refractory to further treatment. When ventricular fibrillation is present, intracardiac procaine 100 mg. to 200 mg., or pronestyl 300 mg. to 1000 mg. in 2% to 10% solution should be used accompanied by defibrillation by electric shock.

Vasopressors, such as vasoxyl, neosynephrine, and wyamine may be useful in keeping the blood pressure above shock level. Rapidly acting glucosides (cedilanid and acetyl strophanthin) may be used if spontaneous cardiac activity does not produce a peripheral pulse.

If resuscitation is successful, the chest is closed after approximately 15 minutes of adequate cardiac action. Massage should not be discontinued for a reasonable period of time even if attempts are unsuccessful to restore action through the use of drugs or other methods. Instances are reported in which cardiac activity returned after 30 to 40 minutes of massage. If effective circulation has not returned within 1 hour, massage may be discontinued. The decision to discontinue massage should not be made on the presence of peripheral cyanosis because a patient may still be cyanotic and have effective circulation.

From the foregoing, it becomes readily apparent that these measures can be accomplished properly only in the presence of a preconceived plan of treatment. Everyone connected with anesthesia or surgery should understand his or her duties in such a crisis and be prepared to execute these duties with machine-like precision. Only through such a plan and by periodic practice, will lives be saved which otherwise would have been lost. The necessary equipment and drugs must be immediately accessible and must be in proper working condition at all times. (Twidwell, J. E., Garske, G. L., Cardiac Arrest During Urologic Procedures: J. Urol., 77:783-789, June 1957)

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### Aging of Arteries in Relation to Hypertension

The most important changes in the arterial tree with age are loss of elasticity and the development of variable amounts of atherosclerosis. The former is the more characteristic and uniform change and this aspect is considered in this review. The increasing rigidity of arteries is responsible for the increase in pulse pressure with age—a relationship that was recorded in the earliest measurements of blood pressure in the population. Recently, this has been studied more closely by Master, Marks, and Dack, by Russek and Zohman in America, and by Hamilton, Pickering, Roberts, and Sowry in England. From the normal trend of a rising blood pressure with age, Pickering has made a strong plea for regarding essential hypertension as an exaggerated manifestation of the normal aging process. This



concept is vital to the understanding of the nature of hypertensive disease; it suggests that the causative mechanism should be sought in the population at large and not as an extrinsic morbid process.

The objective of the present work is to obtain evidence to show whether hypertension is a natural accompaniment of the aging of arteries or whether it is caused by pressor mechanisms acting upon a normally elastic arterial system. Additional data is provided concerning the possibilities that hypertension may lead to premature aging of arteries or, by stretching, make them appear to be more rigid than they are normally.

A clinical method has been developed by which it is possible to assess the elastic qualities of the great vessels in man. The test depends upon changes in pulse pressure that occur when the diastolic pressure is reduced without significant changes in stroke volume. It has been assumed that this can be achieved for a limited number of heart beats immediately after the inhalation of amyl nitrite when, for a few cycles, the blood pressure falls without change in heart rate. Although this test is crude and indirect, the authors believe that it is capable of achieving the objectives of this work.

Responses to the test of normal subjects and patients with arteriosclerotic hypertension—although they showed a wide individual scatter—strongly supported the theoretical basis of the test which was further confirmed by the clinical characteristics of the patients classified into "elastic" and "inelastic" groups according to the test. The patients of the inelastic group were significantly older and had a higher pulse pressure than those of the elastic group. The clinical differences were so great as to suggest that these two groups of patients might, in fact, be suffering from different hypertensive diseases. This possibility appears even more likely if their initial diastolic blood pressures are considered against the normal trend of blood pressure for age and sex in the population at large. From the data of Hamilton, Pickering, Roberts, and Sowry, the mean diastolic pressure for age and sex has been obtained and the upper limit of normality has been taken as twice the standard deviation of their observations for each age group. In all but two of the patients in the "elastic" group, the initial diastolic pressure was found to exceed the limit of the normal range of pressure for the age; in the majority it exceeded the normal for any age. The authors infer that in this group a severe form of hypertension was being imposed upon a normal arterial tree. There were an unusually large number of patients with renal hypertension in this group—7 out of 20. In the absence of definite cause for the elevation of blood pressure, the remaining 13 patients were believed to have essential hypertension and in 2 of these patients histologic confirmation of this diagnosis was obtained.

In patients of the inelastic group, the initial diastolic blood pressure was within the upper region of normality with the exception of 6 patients in whom the diastolic pressure was just above the normal limit. Hypertension in some patients could, therefore, as suggested by Hamilton, Pickering, Roberts, and Sowry, be the result of the physiologic process of aging in

arteries. Rigidity of arteries alone would not raise diastolic pressure and some unknown process must be responsible for an increase in peripheral resistance with age.

Hexamethonium which lowered blood pressure provided some subsidiary information concerning the relationship between hypertension and loss of elasticity, but the conclusions drawn from this part of the work are tentative because the numbers of tests were small. Reducing the blood pressure in patients with arteriosclerotic hypertension had no effect on the type of response to the test, suggesting that the sclerotic process was very advanced and affected the vessels at all levels of tension. In the inelastic group, on the other hand, reducing the blood pressure converted the response from the inelastic to the elastic type in 3 of the 5 patients studied. This suggested that the sclerotic process was less extensive in these subjects and that the arteries would behave as elastic vessels at lower levels of tension.

Some indication appeared that hypertension could lead to aging of arteries. Four patients with renal hypertension were in the inelastic group; two of these had an extremely long history of renal disease.

In conclusion, therefore, the authors believe that a strong case exists for regarding the elastic and inelastic types of hypertension as being distinct and separate diseases. The test has been applied to 16 normal young subjects and 52 patients with hypertension. In the normal subjects, little change in pulse pressure accompanied the fall in diastolic pressure after amyl nitrite, 15% of the fall in diastolic pressure.

In the hypertensive group, there were 15 patients with systolic or arteriosclerotic hypertension. In these patients, the reduction in pulse pressure after amyl nitrite was 116% of the simultaneous fall in diastolic pressure. The remaining patients with hypertension were grouped according to their responses to the elasticity test. In 20 patients, the response was within normal limits and the average fall in pulse pressure was 28% of the fall in diastolic pressure. These patients were believed to have normally elastic arteries. In 17 patients, the fall in pulse pressure was 96% of the fall in diastolic pressure and it did not differ significantly from the response of the arteriosclerotic patients. They were, therefore, believed to have inelastic arteries.

Clinical differences between the elastic and inelastic groups strongly suggested that these patients were, in fact, suffering from different diseases. The patients of the elastic group were younger and had a higher initial diastolic blood pressure than the patients of the inelastic group. (Conway, J., Smith, K. S., Aging of Arteries in Relation to Hypertension: *Circulation*, XV: 827-834, June 1957)

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### Diagnostic Significance of Pleural Effusion

Strictly speaking, the term, "pleural effusion," applies to inflammatory exudates within the pleural cavity, usually a result of acute fibrinous pleurisy. Clinically, however, the term includes any fluid within the pleural cavity. Inflammation with fibrin deposition causes thickening and inelasticity of the pleura, often with resultant adhesions and reduced respiratory capacity. Pleuritic type pain results from the stimulation of pain fibers located exclusively within the parietal and diaphragmatic pleurae. As effusion proceeds, fluid separates the pleural surfaces, decreases the friction, and lessens the pain.

Tuberculosis causes most of the effusions in individuals under 30 years of age while malignant causes become more frequent in later life. In fact, when there is no demonstrable cause for a pleural effusion in a young person, it should be considered tuberculous until proved otherwise. Some believe that idiopathic pleural effusion in any tuberculin positive individual should be considered tuberculosis. Conversely, it is exceedingly rare for the tuberculin reaction to be negative when the pleurisy is tuberculous in origin. Effusion may be present with other pulmonary disease, such as primary atypical, streptococcal, pneumococcal, and virus pneumonias; pulmonary abscess or infarction, and actinomycosis, as well as with extrapulmonary disease including septicemias, congestive failure, rheumatic fever, renal disease, liver cirrhosis, and nutritional deficiencies.

Tuberculosis. The usual explanation for tuberculous pleurisy with effusion is on the basis of allergy, the tissues having become sensitized to tuberculo-protein during the first 3 to 7 weeks after the initial invasion of the organisms. In persons without demonstrable clinical pulmonary tuberculosis, the mechanism is usually subpleural lesions resulting from localization of tubercle bacilli promptly after their first invasion. Tuberculosis is the most common cause of infectious effusions.

The fluid is usually serous, occasionally serosanguinous, and rarely frankly bloody. Translucent fluids do not usually contain enough organisms to be demonstrable by staining; therefore, culture and/or guinea pig inoculation must be employed. This should be done from sediment of large (100-500 cc.) amounts of fluid and results in detection of organisms in 70% of primary effusions in young people. Pleural fluid sugar is far below blood sugar in tuberculous pleurisy and is also lowered in most exudates. Gastric washings and sputum should also be examined and tuberculin testing should be performed. Pleural fluid leukocytosis is rare in tuberculosis, even with empyema. The white cell count is frequently below 1000 per ml. Some 40% of unexplained effusions will be associated with demonstrable tuberculosis within 5 years.

Diagnostic biopsy of 1.5 X 3 centimeter area of parietal pleura is of special value where bacteriological methods do not establish a diagnosis and is without particular danger.

Carcinoma. Generally, pleural effusions due to neoplasm are large with from 1 to 10 liters frequently removed by aspiration. Tumor cells are found in the pleural fluid of about one-half of the cases of neoplasm regardless of whether the fluid is serous or hemorrhagic. Both paraffin cell block and Papanicolaou smear may be employed and there is some evidence that repetition of cell block examinations significantly increases the percentage of diagnoses. Negative findings are not sufficient to rule out malignant effusion, although false positive results occur in up to 3 to 5% of cases. Highly atypical cells may be present in fluids that have been standing for a long time; therefore, this finding does not always mean malignancy.

Neoplastic pleural fluid characteristically continues to form after aspiration. X-ray film after air insufflation may reveal tumor nodules on the pleura.

Carcinoma of the bronchus is the most common type of tumor with carcinoma of the breast second. The only primary tumor of the pleura, mesothelioma, is rare.

Acute Infections. The effusion is usually an exudate accompanied by a polymorphonuclear leukocytosis.

Congestive Failure. Effusion is on the right side in 55 to 70% of cases and is usually a transudate accompanied by other signs of decompensation.

The pathogenesis of effusion in congestive failure as well as the right-sided location of most effusions has been attributed to various mechanisms. One explanation is that pressure on the root of the right lung and azygos vein by an enlarged right auricle causes right-sided effusions. All-in-all, it seems that the causes of unequal pleural effusion in heart failure have yet to be elucidated.

Rheumatic Effusions. These occur in a small fraction of patients with acute rheumatic fever. The fluid has a high specific gravity, tends to bloodiness, and has a rapid clotting time.

Bed rest is the first fundamental of treatment. Aspiration of the effusion restores non-expanded lung to functioning, thereby preventing pleural adhesions from forming and aiding in localization of the infection by the pleura itself.

Many effusions resorb spontaneously on bed rest—especially if small. Streptokinase and streptodornase have been injected intrapleurally causing lysis of fibrinous adhesions and cellular debris. These agents have been most extensively used in the treatment of sanguinous effusions where fibrin is the major substrate and in empyema where nucleoprotein constitutes the bulk of the solid sediment.

Injections of radioactive colloidal gold into the pleural cavity have reduced the rate of fluid formation in about 40% of patients with neoplasms. Results have been best with carcinoma of the breast and less effective with bronchogenic carcinoma. The gold implantation selectively irradiates the lining membrane of the serosal cavity without effecting undue radiation to



other parts of the body. This method of treatment should only be used where there is free fluid and loculation has been ruled out.

Nitrogen mustard has been injected directly into malignant pleural (as well as into peritoneal and pericardial) effusions with a decreased or eliminated fluid formation in 65% of the patients in one series. The incidence of side effects (leukopenia, nausea, and vomiting) was less than with intravenous nitrogen mustard therapy and these effects were mild when they did occur. (Ungerleider, J. T., The Diagnostic Significance of Pleural Effusion: Dis. Chest, XXXII, 83-88, July 1957)

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### Ochronosis

Ochronosis is the name given by Virchow in 1866 to a disease in which he found severe generalized arthritis, discoloration of cartilages within the body, pigmentation of the eyes, the skin over the bony prominences, and the intima of the large blood vessels by deposition of ocher-colored granules. While almost all cases are due to alkaptonuria, ochronosis may also occur following the external use of phenol and may be associated with the excretion of melanin in the urine. Alkaptonuria is a rare systemic disease characterized by the presence of alkaptonic or homogentisic acid in the urine due to an inborn error in metabolism of tyrosine and phenylalanine. These substances are broken down only as far as homogentisic acid which accumulates in the blood and is excreted in the urine. Approximately 50% of alkaptonurics develop ochronosis.

Ochronosis appears at about an average age of 50 years and the sexes are approximately equally afflicted. The disease lasts throughout the life of the patient. There is a definite hereditary tendency and the incidence of alkaptonuria has been shown by Bateson to be on the basis of mendelian inheritance of recessive characteristics. According to Sacks, in 42% of reported cases, there has been a history of consanguineous marriages, particularly of first cousins.

Alkaptonuria may be suspected in infancy on the basis of black discoloration of the diapers or clothing from the alkaptonuric urine or it may go unrecognized until later in adult life when it may be found to be the cause of severe arthritis or when ochronosis appears.

Most alkaptonuric patients, as they grow older, acquire the findings of ochronosis with extensive arthritis and the deposition of pigment in the ears, sclerae, and skin. Ochronosis is not solely due to alkaptonuria, however, and may be associated with the external use of phenol or with the excretion of melanin in the urine.

Examination of a patient with ochronosis reveals discoloration of the skin of the ears, sclerae, head, neck, and torso. Where arthritis is present, there is swelling and deformity of involved large and small joints. The back

is usually rigid and kyphotic. Pomeranz, et al., have described the posture as reminiscent of Paget's disease with the head thrust forward, the neck muscles appearing unduly prominent and the chest large and somewhat emphysematous. The arms are held limply at the sides. The patient walks slowly and with difficulty and the lower extremities may be moved in toto.

The ears frequently are involved early with a grayish blue discoloration and there is a feeling of rigidity, possibly with nodularity, on palpation. There is a fairly high incidence of cardiovascular disease associated with ochronosis, undoubtedly related to the metabolic anomaly.

The roentgen findings in ochronosis have been described in detail by Pomeranz, et al. The spine, pelvis, shoulders, knee joints, and ears are the areas which are characteristically involved, although other joints may show similar changes. (Thompson, M. M., Jr., Ochronosis: Am. J. Roentgenol., 78: 46-49, July 1957)

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### Gallstones in Young Women

Gallstones occur frequently in young women. Their symptomatology is varied and sometimes misleading. Difficulties in diagnosis may be aggravated by reluctance to suspect gallstones prior to middle age. Recognition of their presence in early adult life permits the performance of cholecystectomy under the most favorable circumstances for reduction in surgical mortality and morbidity.

The incidence of gallstones increases with each decade of life. The principal factors contributing to fatality in biliary tract surgery are acute and complicated forms of cardiovascular, pulmonary, renal, or systemic disease. Generally, it is agreed that further significant reduction in the mortality of biliary tract surgery will be dependent upon earlier recognition of the disease and earlier extirpation of the gallbladder. In later decades, the incidence in men approaches that in women, but in early adult life, gallstones are preponderantly a disease of females.

To some extent, the concept of gallstones as a disease of middle or advanced age still prevails despite the insistence of many writers that gallstone formation is common in early adult life.

The principal emphasis in reports of the current era has been directed to the advanced and complicated forms of cholelithiasis which account for the bulk of surgical mortality and morbidity. By comparison, the earliest clinical forms of the disease have received little attention. Some early manifestations of gallstones are doubtless overlooked or misinterpreted, while in other instances, known gallstones are left untreated because the subject is young or is experiencing little difficulty from them. Appreciation of the clinical behavior of gallstones in young women will aid in earlier diagnosis and avoidance of late complications.



In a recent series by the author of 100 consecutive private female patients undergoing operations for cholelithiasis, the incidence of cholelithiasis in the third decade was higher than in any other comparable age group. Twenty-three of 100 patients were between the ages of 21 and 30 at the time of operation. While this series is too small to be statistically significant, it serves to emphasize the frequency of gallstones in young women. Moreover, the members of this group exhibited clinical manifestations differing at times from the traditional concepts and leading in some instances to errors in diagnosis or delays in treatment. These 23 patients are the subject of this review.

On the basis of the experience gained with this series of patients, as well as that reported by other authors, the composite manifestations of gallstones in the average young woman may be outlined as follows:

1. She has usually had one or more children; subsequent to her first pregnancy, she is a candidate for gallstone formation regardless of her age.

2. While she may experience symptoms referable to the gallbladder during pregnancy, she is unlikely to undergo an operation of necessity for acute cholecystitis during this time. She is more likely to suffer severe attacks during the early weeks or months following pregnancy than during the pregnancy itself.

3. She may be of any physical stature or complexion; she is as often slender as obese and as often brunette as blonde.

4. Her attacks of pain tend to be brief and severe. Their relationship to food is inconstant and is as often lacking as present. Her pain frequently awakens her from sleep or may develop during periods of fatigue or anxiety. It is as likely to be in the epigastrium as in the right upper abdomen.

5. She is often observed in several attacks or treated for months before the correct diagnosis is established. She is frequently suspected of having duodenal ulcer or gastroenteritis.

6. Her stones are usually multiple, small (4 mm. or less), round, radiolucent, and composed largely of cholesterol. At operation, they are often encountered in the cystic duct between the folds of the valves of Heister. In later years, her stones probably grow larger.

7. Stones are rarely recovered from her common duct. The author believes that such stones gain access to the common duct more frequently than has been supposed, but that because they are small they are usually expelled through the duodenal ampulla.

8. When she undergoes cholecystectomy, the operation is ordinarily accomplished under highly favorable circumstances with gratifyingly low mortality and morbidity.

9. Following operation, she is unlikely to suffer from subsequent dyspepsia attributable to loss of the gallbladder. (Sparkman, R. S., Gallstones in Young Women: Ann. Surg., 145: 813-822, June 1957)

### Portacaval Shunts for Portal Hypertension

Whipple and his associates established the fact that portal hypertension can occur in man when free flow of blood out of the portal venous system is obstructed either within the liver by cirrhosis or other diseases or outside the liver by disease of the portal vein and its tributaries. Splenomegaly and the development of collateral venous channels including esophageal varices are sequels of portal obstruction. Portal decompression by some form of portacaval anastomosis seemed a natural solution to the problem of bleeding from esophageal varices. As the experience of many surgeons accumulated, it became apparent that small shunts between minor veins of the two systems were regularly ineffective and that anastomoses between the portal vein and vena cava or between the end of the splenic vein and the side of the left renal vein offered most promise.

The authors join those who consider these operations useful in the management of selected patients who bleed from esophageal varices. They present experience with 55 patients on whom splenorenal or direct portacaval shunts were performed from 1951 to 1955. Forty-seven patients had intrahepatic portal obstruction; 8 had extrahepatic portal obstruction and had not undergone splenectomy previously. The two groups are described separately.

To January 1, 1955, the authors' experience in the use of shunts between the portal and caval venous systems in the treatment of portal hypertension with bleeding from esophageal varices consisted of 55 cases.

Forty-seven patients had intrahepatic portal obstruction caused in all but 4 instances by cirrhosis of the liver. Thus far, these operations have been utilized almost entirely for patients who have bled from varices and who have not had chronic intractable ascites. In selecting patients for operation, criteria suggested by Linton and Blakemore were used. The evidence indicates that, although large well placed portacaval or splenorenal anastomoses do not provide absolute protection against subsequent gastrointestinal bleeding, they are effective in most instances. The effect of portacaval shunt on survival of patients with cirrhosis of the liver who have bled from esophageal varices cannot be assessed at present due to lack of suitable controls. Survival rates are greatly superior to those of unselected patients with cirrhosis who have bled, many of whom have impairment of hepatic function which is too great to permit operation. The serious neurologic symptoms which followed end-to-side portacaval anastomosis in 3 patients and the transient symptoms which occurred in 3 others in this series are described in some detail. Although the factor of chance may account for the greater incidence of neurologic symptoms among these patients than that reported by others, experience prompted the authors to utilize splenectomy and splenorenal shunt when splenic portograms indicated that the splenic vein is large.



Thirteen patients were seen with extrahepatic portal obstruction and who had not previously undergone splenectomy. In general, when the splenic vein is patent in these patients, splenectomy with end-to-side splenorenal anastomosis is considered the operation of choice. Unsatisfactory results in 4 children, aged 4 to 6 years, are considered an exception to this rule. Splenic veins in small children with this disease are usually small; this is assumed to be the reason that splenorenal shunts failed to control the bleeding. At present, transesophageal ligation of varices is being performed in these children, hoping to obtain remissions from bleeding for enough years that the children can grow larger and become better subjects for splenorenal anastomosis. (Hallenbeck, G. A., Shocket, E., An Evaluation of Portacaval Shunts for Portal Hypertension: Surg. Gynec. & Obst., 105: 49-60, July 1957)

\* \* \* \* \*

#### Wasp Venom Allergy and Immunity

The dual purpose of this 3-year study was to develop a safe and effective immunization procedure for individuals with a history of severe reaction to wasp sting and to evaluate diagnostic tests of the skin and conjunctiva by means of controlled studies in normal individuals. In a limited way, it was also possible to observe the acute manifestations of venom allergy and to examine the antigenic relationships among several varieties of wasp.

According to two reviews, clinical immunity against hymenoptera (wasps, bees, ants, et cetera) has been achieved in a limited number of individuals by the injection of graduated amounts of whole body extract as well as by the accidental or planned intermittent stings of live insects. In order to limit the number of components in the immunizing material while at the same time controlling the volume administered, the authors have introduced the use of wasp venom (free of other body constituents and of adhering contaminants, such as pollen), the unit of antigen being temporarily the surgically removed venom sac.

The wasp-allergic patient can be given considerable assurance regarding the success and safety of his immunization, especially if he is able to identify the provocative insect. Acquired immunity has been demonstrated according to several criteria. One of these is the patient's acquired capacity to tolerate amounts of venom which were originally provocative of marked overdose reactions. Most convincing is his ability to undergo planned and accidental stinging without untoward effect following a course of therapy. Heightened thresholds of cutaneous and conjunctival responsiveness to venom are also indicative of resistance. Experience in 1955 has shown that a total of about six sacs of venom is protective against the sting of the homologous wasp. Because such a course can be completed during a single visit of some

hours without untoward reaction, there is every reason to anticipate that the injections could be stretched out over one or two months with equal effectiveness and safety. The single visit was chosen by the authors because it was more convenient for patients who came from distant areas. Also, they were enabled, during the experimental period, to determine the limits of tolerance of each individual for administered venom during several hours of intermittent injection. The extent to which this limit was raised subsequent to treatment then served as assurance that the patient had acquired immunity.

Although no titrations were attempted, it is logical to assume that immunization is accompanied and perhaps conferred by the formation of blocking antibody similar to that acquired by the pollen- or insulin-allergic subject following injections with the related antigen. The elevation of the thresholds of response in the skin and eye of the venom treated subject is presumably dependent on his acquisition of this type of antibody.

Use of the venom sac as the unit of measurement of wasp allergen is a temporary expedient pending an arrangement for the speedy removal of sufficient venom to permit chemical assay on each batch. The adoption of a chemical standard should increase the reproducibility of diagnostic tests and therapeutic results.

Carried out with specific antigen and with all precautions, the prophylactic management of wasp allergy is undoubtedly a life-saving measure to which the highly sensitized individual is entitled.

Venom removed from the extirpated sacs of live wasps has been employed for the first time for the diagnosis and immunization of wasp-allergic individuals. The levels of response of normal young adults to the venom of the yellow-jacket wasp have been delineated for the first time by means of concurrent tests of the skin and eye as well as a 3-minute sting with a live worker insect.

During comparable tests of the tissues of wasp-allergic subjects, it was found that lower concentrations of venom sufficed for their threshold responses. Following immunization with the venom of the yellow jacket, however, the patients' intracutaneous and conjunctival reactions approached those of the normal control subjects. Responses of immunized patients to deliberate insect stings also resembled those of the control group.

Not only the direct tests of sensitized individuals, but also experiments with their serum in normal skin indicated that five of the hymenoptera (yellow jacket, bald-faced hornet, paper wasp, honeybee, and bumblebee) possess a common allergenic specificity, while each also contains in its venom a component which is peculiar to it. The honeybee appears to be more closely related to the three wasps examined than is the bumblebee; the three wasps have a great deal in common. Probably each venom is a complex antigenic mixture. Three "anaphylactic" syndromes encountered during early trials with venom immunization resembled the acute hypotensive reactions to histamine.



(Loveless, M.H., Fackler, W.R., Wasp Venom Allergy and Immunity: Ann. Allergy, 14: 347-366, September-October 1956)

\* \* \* \* \*

Rear Admiral Kern Appointed Member of  
Naval Research Advisory Committee

Rear Admiral Richard A. Kern MC USNR (Ret), was appointed a member of the Naval Research Advisory Committee in a ceremony held in the office of the Honorable Mr. Garrison Norton, Assistant Secretary of the Navy for Air, on July 11, 1957.

The Committee is composed of 15 eminent men of science. Its purpose is to advise the Secretary of the Navy, Chief of Naval Operations, and Chief of Naval Research on trends in research, research potentialities, and the over-all research policy in the Navy.

The Navy Medical Department is justly proud of this high honor bestowed upon one of its members.

(Bureau of Medicine and Surgery)

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IN MEMORIAM

RADM Arthur J. White MC USN (Ret)	March 26, 1957
CAPT Thomas A. Fortescue MC USN (Ret)	February 22, 1957
CAPT Elmer B. Johnson MC USN	April 27, 1957
CAPT Rudolph I. Longabaugh MC USN (Ret)	May 16, 1957
CAPT Walter A. Vogelsang MC USN (Ret)	February 27, 1957
CDR Frederick L. Finch MC USN (Ret)	May 21, 1957
CDR Melvin D. Roberts MC USNR (Ret)	March 8, 1957
CDR Edward M. Smith MC USN	May 13, 1957
CDR William Sanders MC USNR-R	July 7, 1957
CDR Catherine E. Yarnall NC USN (Ret)	June 10, 1957
LCDR Leonard G. Crosby MC USNR (Ret)	February 17, 1957
LCDR Ruben L. Larsen MC USN (Ret)	June 21, 1957
LCDR Raymond F. Price MSC USN (Ret)	May 31, 1957
LT Edward G. Dickinson HC USN (Ret)	May 21, 1957

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Please forward requests for change of address for the News Letter to:  
Commanding Officer, U. S. Naval Medical School, National Naval Medical Center,  
Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

From the Note Book

1. Fleet Admiral C. W. Nimitz USN was the Guest of Honor and made the principal address at a graduation ceremony held on June 28, 1957 at the Naval Hospital, Oakland, Calif. The occasion marked the completion of internship training for 20 Lieutenants MC and 2 Lieutenants DC USN. (TIO, BuMed)
2. Rear Admiral B. W. Hogan, Surgeon General of the Navy, visited the Naval facilities at Camp Lejeune, N. C., during the period July 22 - 25, 1957. (TIO, BuMed)
3. Attention of Medical officers is directed to comments appearing at the close of the article, Nationwide Need for Epidemiologists, page 22 of this issue of the News Letter. Incorporated in the comments are special provisions which will permit interested Medical officers to apply for immediate training for a career in preventive medicine. (PrevMedDiv, BuMed)
4. A contract for construction of a new 800-bed Naval Hospital at Great Lakes, Ill., was awarded and signed by the T. C. Bateson Construction Company, Dallas, Texas, on June 28, 1957. The new hospital will be so constructed that it can be expanded to a 1500-bed hospital. (TIO, BuMed)
5. Two Navy Dental officers are assigned to the wintering-over group of Navy and civilian scientists of Operation Deep Freeze II which is spending 18 months in Antarctica to participate in the International Geophysical Year activities. LT's R. J. Adams and D. C. Hauch DC USN are providing dental care for the personnel stationed at McMurdo Sound and Little America and are conducting research studies related to various dental conditions. The research program outlined by the Committee on Dentistry of the National Research Council, National Academy of Sciences, is under the supervision of Captain W. R. Standmeyer DC USN of the U. S. Naval Medical Research Laboratory, New London, Conn. (TIO, BuMed)
6. The Surgeon General of the Public Health Service has announced that there is increasing evidence that excessive cigarette smoking is one of the factors which can cause lung cancer. The statement said that many independent studies have confirmed beyond reasonable doubt that there is a high degree of statistical association between lung cancer and heavy and prolonged cigarette smoking. (PHS, HEW)
7. (a) Any doctor may receive a subpoena requesting his presence in court as an expert witness or simply to give testimony in a litigation. (b) A pre-trial conference with the attorney is helpful in clarifying what the physician's



role will be and what preparation is advisable. (c) The doctor-witness can simplify his task by reviewing his records of the case and by organizing data and information he will present. (d) Proper preparation and effective presentation fortify the physician against the rigors of cross-examination to which he is subject. (Parke-Davis "Therapeutic Notes" - July - August 1957)

8. Over a 3-year period 608 (18%) of the patients admitted to the tuberculosis section of Fitzsimons Army Hospital were found not to have tuberculosis. Ten conditions comprised 77% of the total lung disorders encountered. The great importance of the tuberculin test and sputum cultures is emphasized. In the 1954 series, 40% of the patients were tuberculin negative and 12% had "false positive" sputum reports. The need for prompt biopsy of material in obscure lung lesions is stressed. (Am. Rev. Tuberc., June 1957; R. M. Burke, J. A. Wier.)

9. The continuous use of a cardiac monitor at the operating table as an adjunct to careful clinical evaluation provides a means for detection and differential diagnosis of cardiac stand-still, ventricular fibrillation, and peripheral vascular collapse. (Surg. Gynec. & Obst., July 1957; R. Simpson, M. D., B. Abrams, M. D., A. S. Gordon, M. D.)

10. The problem associated with adequate casualty treatment under disaster conditions, the part which the dental profession might play in such circumstances, and a brief review of the training program of the Navy are discussed in J. A. D. A., July 1957; CAPT's H. J. Towle, J. V. Niiranen DC USN.

11. The diuretic effects of oral organomercurials (Neohydrin and Metrox) were compared to those induced by bed rest and by injectable mercurials (Mercuryhydrin and Mersoben) in groups of normally pregnant and toxemic patients. No significant difference existed between the effects of oral mercurials and bed rest. Injectable mercurials produced marked diuretic effects which were significantly different from those induced by oral mercurials and bed rest. It is suggested that the lack of diuresis of the oral mercurials might be due to impairment of intestinal absorption for mercury during pregnancy. (Circulation, June 1957; N. S. Assali, M. D., J. Voskian, M. D., J. Roller, M. D.)

12. Spinal tumors run a wide gamut from small to large, intramedullary to extradural, benign to malignant. All categories can be serious. All are important to the patient, particularly if they cause pressure on the spinal cord or on one of the nerve roots. The radiologist must be alert and use every means possible to identify a lesion early so that the surgeon may relieve any pressure before irreversible changes occur in the nervous system. (Am. J. Roentgenol., July 1957; A. S. Tucker, M. D., B. Aramsri, M. D., C. R. Hughes, M. D.)

13. A series of 106 patients with malignant melanoma is analyzed according to anatomic location, symptoms, and results of surgical treatment. Radical local surgical removal is recommended as early as possible. Regional lymph node dissection is advocated as the most effective means of "cure" as well as prolongation of life. (Ann. Surg., June 1957; H. P. Royster, M.D., L. M. Baker, M.D.)
14. Surgical procedures employed to alleviate deafness include: (a) removal of lymphoid tissue of the oropharynx and nasopharynx; (b) modified and radical mastoidectomy with skin grafts; (c) in patients with atresia, creation of an external auditory canal; (d) fenestration; and (e) mobilization of the stapes. (J. Internat. Coll. Surg., June 1957; A. T. Lieberman, M.D.)
15. A survey of 13,207 abdominal aortograms reported in questionnaires sent to hospital radiologists and urologists in the U. S. revealed 37 deaths and 98 serious complications. The over all complication rate was 1.02% and the mortality rate was 0.28%. (Radiology, June 1957; J. G. McAfee, M.D.)
16. The management of Wilms' tumor as determined by national survey and review of the literature is discussed in J. Urol., June 1957; B. S. Abeshouse.
17. Various fundamental dynamic factors of the pathologic mechanism in the development of stasis ulcer are studied. Management is aimed at suppressing the inflammatory mechanism aiding in the restoration of biochemical equilibrium of the skin, promoting regeneration of tissue over the ulcer, and applying supportive measures to the affected leg. (Geriatrics, July 1957; E. J. Chesrow, M.D., et al)

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#### Nationwide Need for Epidemiologists

An editorial (Epidemiologic Method, New England Journal of Medicine, 254: 1044-1045, May 31, 1956) made a strong plea for applying the epidemiologic method to chronic and noninfectious diseases. Few would dissent. It will, however, be extremely difficult to put the recommendation into effect, because epidemiology is suffering from a shortage of personnel at all levels from field workers to bureau chiefs and from students to professors. Shortages are found at all levels of government operation—Federal, State, and local—as well as in departments of universities and institutes engaged in pure research. There is, moreover, an acute shortage of teachers in epidemiology.

Two things are required to meet this situation: more interested medical leaders and more adequate training facilities. Of major concern is the matter of attracting additional competent physicians into the specialty of



epidemiology, since present facilities, although limited, can train more students than apply.

Epidemiology has a great tradition and a great promise. One may go back 200 years to the classic studies of Sir George Baker on lead as a cause of Devonshire colic. In more recent times, epidemiology has supplied the essential clues for fruitful laboratory and clinical investigations of pellagra and goiter. The experience with mottled dental enamel and amyotrophic lateral sclerosis indicates that the etiological factors for certain diseases can be uncovered by purely epidemiologic means. In addition, it should be noted that we now are beginning to get substantial leads from epidemiologic studies in some aspects of mental illness.

There is general agreement as to the need for more epidemiologists. At National Institutes of Health, there now exist 25 vacancies for epidemiologists and 15 more vacancies are anticipated. Adding to this, the large number of vacancies in other divisions of the Public Health Service, in our State and local health departments, in departments of preventive medicine, and in schools of public health, the current demand totals many hundreds and one may expect that the demand for personnel with epidemiologic training will continue to grow.

All of the health agencies mentioned are seeking physicians who, in addition to their clinical skills, have acquired the techniques and experience requisite for the study of disease among groups of people—investigations as intellectually challenging and professionally productive as are the more familiar laboratory or clinical studies of the individual patient. Epidemiologists need formal training in field methodology and in biostatistics as well as in inductive and deductive reasoning. The added capacity for developing orderly procedures is useful. When this is combined with advanced study of one or another specific disease and accompanied by practical field research, there emerges an epidemiologist.

Although some examples can be cited of "homegrown" epidemiologists, the majority are trained in schools of public health where the bulk of their training deals with group concepts of populations and with the man environmental interrelationships.

There are several obvious reasons why more young men are not turning to this exciting and promising field of investigation. In general, the medical student is—or should be—self selected for his interest in restoring individuals from sickness to health. Moreover, the curriculum in medical schools today tends to concentrate interest upon the individual rather than upon population aspects of health and disease. Also, the majority of medical students who acquire a motivation for research are recruited promptly by their professors for laboratory and clinical studies. Too many medical students scarcely have heard the term epidemiology. Those who are familiar with it are apt to think of epidemiology as a specialty of earlier generations when infectious diseases loomed so large in medicine. There

is now an equally interesting epidemiology of heart disease, cancer, mental illness, arthritis, and peptic ulcer—even of automobile accidents—to challenge superior talents.

The nine approved schools of public health in the continental United States are prepared to accept students for epidemiologic training and for participation in research projects now under way. Several of these schools are currently giving special attention to advanced epidemiologic training in the chronic diseases, using grant funds now available through the National Institutes of Health to schools of public health, medical schools, and other appropriate university departments to make possible expanded teaching programs both in epidemiology and in the related discipline of biometry.

The greatest need at the moment in every medical center is the development of an active relationship between potential students, the departments of preventive medicine, and the schools of public health. It seems logical to believe that the need for epidemiologists can be met in due course if professors of preventive medicine look upon the recruitment of young physicians for epidemiology as a major mission in the battle against disabling disease and premature death. (Editorial by Parran, T., *Nationwide Need - Epidemiologists: J.A.M.A.*, 163: 742-743, March 2, 1957)

Comment. It is suggested that Medical officers of the rank of Lieutenant Commander and below give careful consideration to the practically assured career that is available to physicians in the field of epidemiology both in the Navy and after retirement in civilian life. Billets for epidemiologists in the U. S. Navy Preventive Medicine Units, U. S. Navy Medical Research Units, U. S. Naval Medical School, U. S. Navy Medical Research Institute, and the Bureau of Medicine and Surgery create a pressing need for recruitment. Applications for postgraduate training in approved schools of public health for the academic year beginning September 1957, including appropriate service agreement, should be submitted immediately by Dispatch Applications for the academic year beginning September 1958, including service agreement, may be submitted at any time up to the Spring of 1958. It is none too early to start inquiries and planning. Information about course leading to the degree of Master or Doctor of Public Health may be obtained from the schools or from the Bureau of Medicine and Surgery.

(PrevMedDiv, BuMed)

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#### Board Certifications

##### American Board of Internal Medicine

LT Robert W. Bedinger (MC) USNR (Inactive)  
LT Walter W. Byrnes (MC) USNR (Inactive)  
LT Robert E. Clancy (MC) USNR (Inactive)



American Board of Internal Medicine (continued)

LT Modestino G. Criscitiello (MC) USNR (Inactive)  
LT Harry H. Haddon, Jr. (MC) USNR (Inactive)  
LTJG John R. Jaenike (MC) USNR (Inactive)  
LCDR Philip R. James (MC) USNR (Inactive)  
LT Claude R. Joyner, Jr. (MC) USNR (Inactive)  
LTJG Robert A. Keisman (MC) USNR (Inactive)  
LT William B. Kinlaw (MC) USNR (Inactive)  
LTJG Melvin I. Klayman (MC) USNR (Inactive)  
LTJG Arthur Krosnick (MC) USNR (Inactive)  
LCDR Francis J. Linehan, Jr., MC USN  
LT Richard J. Maher (MC) USNR (Inactive)  
CDR Robert J. McCarthy MC USN  
LT Patrick F. McCormack, Jr. (MC) USNR (Inactive)  
CAPT Paul T. Moore MC USN  
LT Carl K. Needy (MC) USNR (Inactive)  
LTJG Elliott F. Osserman (MC) USNR (Inactive)  
LT Albert H. Owens, Jr. (MC) USNR (Inactive)  
LT Martin A. Rizack (MC) USNR (Inactive)  
LTJG Lawrence Silver (MC) USNR (Inactive)  
LT Albert W. Stahman (MC) USNR (Inactive)  
LT Charles V. Treat, Jr. (MC) USNR (Inactive)  
CAPT Robert J. Whipple MC USN  
LTJG Thomas W. Williams (MC) USNR (Inactive)

American Board of Obstetrics and Gynecology

LT Robert G. Campbell MC USNR (Inactive)  
CDR James H. Lee, Jr., MC USN

American Board of Ophthalmology

LT Alfred W. Scott, Jr. (MC) USNR (Inactive)  
LT Joseph M. Sanderlin MC USN

American Board of Orthopedic Surgery

CDR Robert C. Doolittle MC USN

American Board of Pathology

LT Richard D. Otis (MC) USNR (Inactive)

American Board of Plastic Surgery

LCDR William J. Champion MC USN

American Board of Radiology

LTJG Robert P. T. Reeves MC USNR (Inactive)  
LT David J. Stephenson (MC) USNR (Inactive)

American Board of Surgery

LT Thomas F. Boyd (MC) USNR (Inactive)  
CDR John I. F. Knud-Hansen MC USN  
LT Arpad L. Masl y, Jr. (MC) USNR (Inactive)  
LT George T. Shires (MC) USNR (Inactive)

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor are they susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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BUMED NOTICE 1550

9 July 1957

From: Chief, Bureau of Medicine and Surgery  
To: Commandants, All Continental Naval Districts  
Commanding Officers, Naval Reserve Medical Companies  
Subj: Naval Reserve Medical companies curriculum entitled "Preventive Medicine" for fiscal year 1958  
Ref: (a) BuPersInst 1550.17, Subj: Preparation of curricula for Programs of the Naval Reserve (NOTAL)  
Encl: (1) Subject curriculum complete with reference material

This Notice promulgates the enclosed "package" curriculum to be used in the medical training program of the Naval Reserve during fiscal year 1958.

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BUMED NOTICE 11011

16 July 1957

From: Chief, Bureau of Medicine and Surgery



To: All Naval Hospitals and Naval Medical Centers

Subj: Data concerning utilities and miscellaneous units of measure,  
request for

Encl: (1) Form for reporting data (2 copies)

This notice requests information concerning various units of measure data on utilities for fiscal year 1957.

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BUMED NOTICE 7301

18 July 1957

From: Chief, Bureau of Medicine and Surgery

To: All BuMed Management Control Activities

Subj: Travel of patients; expenditure account to be used

This notice expedites the issue of accounting instructions, in advance of a change to be issued by the Comptroller of the Navy to Volume 2, NavCompt Manual, relating to subject matter.

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**DENTAL**



**SECTION**

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Memorandum for: All Personnel of the Naval Dental Service of the United States Navy

Subject : Forty-Fifth Anniversary of the Founding of the U. S. Navy Dental Corps

On 22 August 1957, the U. S. Navy Dental Corps will commemorate the forty-fifth anniversary of its establishment. On that date in 1912, President William Howard Taft signed into law the Naval Appropriation Act

which included a provision for the appointment of "not more than thirty assistant dental surgeons . . . . to serve professionally the personnel of the naval service."

During the past forty-five years, many competent dentists have dedicated their professional careers to providing the best possible dental support to the Navy and Marine Corps. At the present time, dental treatment is furnished in more than four hundred dental facilities in ships, stations, and Marine Corps units located throughout the world. These facilities are manned by approximately 1800 dental officers, 33 Medical Service Corps officers, 38 Dental Service Warrant Officers, and 3300 dental technicians. The combined efforts and teamwork of these officers and technicians made possible the excellent level of dental care which was rendered during the past year. The important contribution of each individual is recognized and appreciated.

It is appropriate that all dental officers should view the forty-fifth anniversary of the founding of the Navy Dental Corps as a day to reflect on the significant accomplishments of the past, to undertake the problems of the present, and to plan for further advances in Navy dentistry.

R. W. MALONE  
Rear Admiral (DC) USN  
Assistant Chief for Dentistry  
and Chief, Dental Division

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Erroneous Submission of Equipment and Facilities -  
Supplement to Dental Service Report

Numerous dental activities have erroneously submitted the Equipment and Facilities Supplement to the Dental Service Report (DD477-1) for the period ending June 30, 1957. Attention is invited to BuMed Instruction 6600.1, Supplement 1, dated September 26, 1956, which states that the DD477-1 will be submitted annually as of January 1st each year. Submission as of July 1 is no longer required.

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"Operation Build-Up" - Navy Dental Corps

On June 10, 1956, the Dental Corps, Regular Navy, reached another peak with a total of 875 officers on active duty. This is an increase of 176 career Dental officers since August 1954.

(See chart on page 29)



# DENTAL OFFICERS APPOINTED IN THE U.S. NAVY—

DURING THE PERIOD  
1 MARCH 1957 TO  
10 JUNE 1957

THEODORE A. BODINE, JR.

ALFRED O. BRAULT

JERRY G. BREWSTER

RONALD N. DODDS

ROBERT L. HILL

JOHN B. HOLMES

JOHN H. JAYNE

HARRIS M. KIMBROUGH

RICHARD W. LITTLE

ROBERT W. LONGTON

ROBERT S. NOLF

FRANCIS H. ORLAWSKI

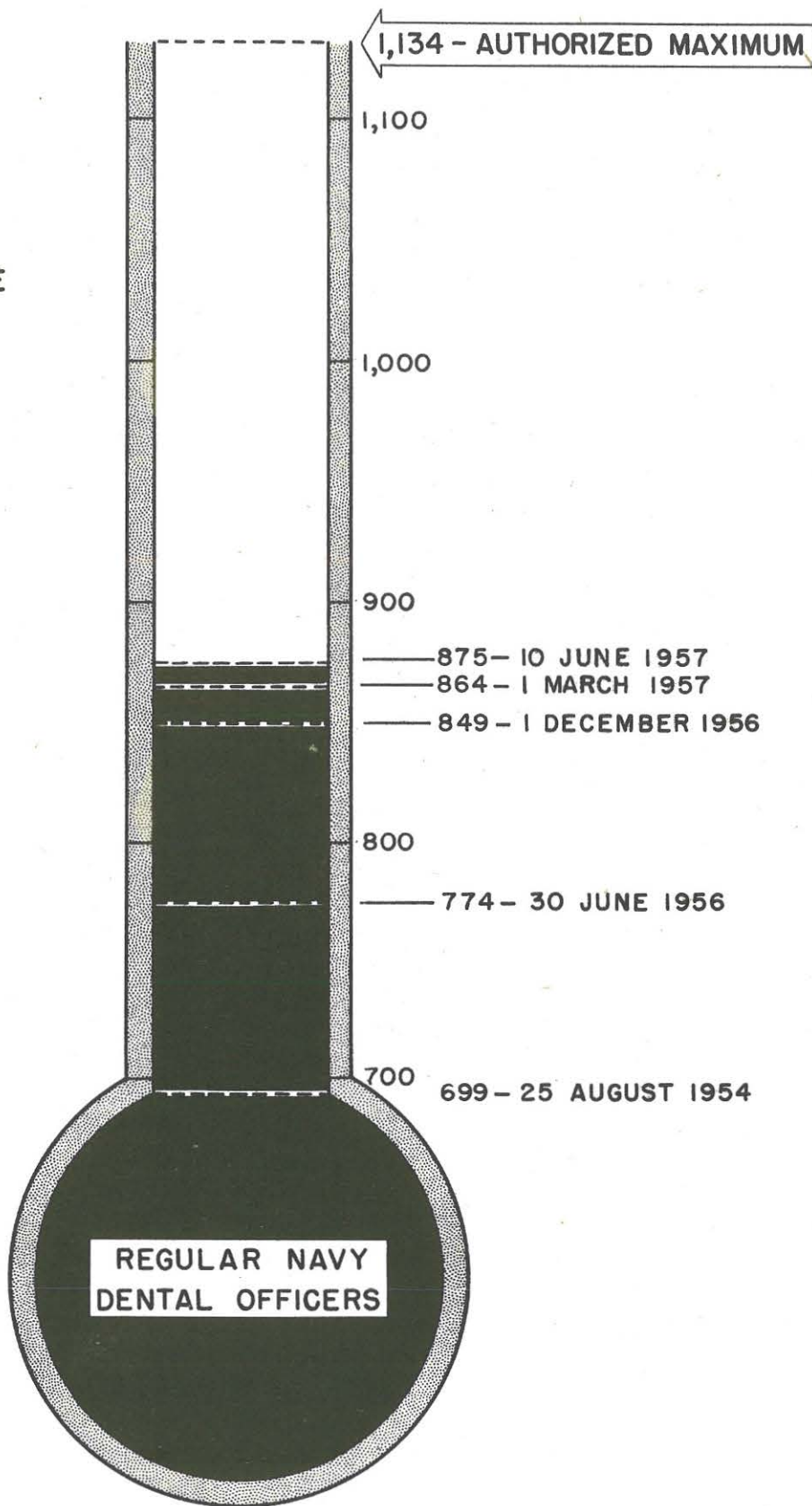
CHARLES E. PATTEN

JAMES H. SCRIBNER

JOSEPH L. TENCA

DON H. WHITED

HENRY G. WRIGHT





## RESERVE SECTION

### Reserve Medical Companies' Package Curriculum - Fiscal Year 1958

The package curriculum on the subject, Preventive Medicine, has been completed and is being distributed to the commanding officers of 51 Naval Reserve Medical Companies throughout the United States.

As the package curriculum for fiscal year 1957 was also on the subject of Preventive Medicine, the curriculum for 1958 is a continuation of this important field of military medicine and consists of material for 12 drill periods containing all necessary study and reference material assembled in separate units so that participating members and guest speakers may prepare lectures well in advance of scheduled drills. The curriculum may be utilized for a great number of drills if necessary. Topics for presentation are:

<u>Period</u>	<u>Subject</u>
1st	Occupational Medicine
2nd	Preventive Dentistry
3rd	Chapter 17-Manual of the Medical Department, Reports, Forms and Records; Deaths
4th	Federal Food, Drug, and Cosmetic Control
5th	Organization of a Commissary
6th	Food Service Principles
7th	Nutrition
8th	Training of Food Handlers
9th	National Hospital Program for Rural Communities
10th	Ventilation and Thermal Stress Ashore and Afloat
11th	Public Health Significance of Paralytic Shellfish Poison
12th	World Health Program

Subjects need not be presented in the order as listed and reference material may be augmented as desired. The unit's training program may be varied through an occasional drill conducted with a program of local choice.

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### Two Reserve Hospital Corps Divisions Established

Naval Reserve Hospital Corps Division 4-2 has been activated at the Veterans Administration Hospital, Pittsburgh, Pa., with three (3) Medical Department officers and thirty (30) enlisted Hospital Corpsmen as members. This division is concurrently assigned to the U. S. Naval and Marine Corps Reserve Training Center of the same city for administration.

Naval Reserve Hospital Corps Division 4-3 has been activated at the U. S. Naval and Marine Corps Reserve Training Center, Columbus, Ohio, with three (3) officers and thirty (30) enlisted Hospital Corpsmen as members.

These divisions are in the pay program with 48 paid drills scheduled per year. Reserve Medical Department personnel interested in membership in one of these units should communicate with either the Reserve Medical Program Officer, 4th Naval District, or the USN & MCRTC in Pittsburgh or Columbus respectively.

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### Flunked Correspondence Course Assignments Can be Reworked

Students who flunk courses at the Correspondence Course Center will be given a second chance at a passing grade under a new procedure inaugurated by the Center on 1 July 1957; they will be permitted to rework the failed course assignments. This procedure is as follows:

If a course assignment is satisfactory (3.4 for officer courses; 3.2 for enlisted courses), the Center will return the assignment to the student with the grade indicated and no further action will be required.

If an assignment is unsatisfactory, the Center will notify the student of his grade, but will not return the assignment to him. The student may still earn a satisfactory grade in the course by increasing his efforts and attaining higher grades on the remaining assignments in order to bring his average grade up to passing for all assignments.

If on course completion the student's average grade for all assignments is satisfactory, he will have passed the course.

If on course completion the student's average grade for all assignments is not satisfactory, the Center will give him an opportunity to rework the assignments he has failed. If after reworking the assignments his average for the course is satisfactory, he will have passed the course.

Naval Reserve officers are required to have a satisfactory grade for each creditable unit of a course (usually 12 points). The resubmit opportunity will be given these officers at the end of the course unit rather than at the end of the entire course.

When resubmission is required, the student must rework each unsatisfactory assignment in its entirety and within the time limit set by the Center to be eligible for consideration. He will be given only one opportunity to resubmit failed assignments.

This procedure applies only to assignments received at the Center on and after 1 July 1957. Unsatisfactory assignments received before 1 July 1957 may not be reworked because these will already have been returned to the student with the correct answers indicated.

(Naval Training Bulletin, May 1957)

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## PREVENTIVE MEDICINE SECTION

### Driver Behavior and Accidents

Research study of driver behavior in Schenectady, N. Y., consisted of home interviews with a randomly selected sample of drivers to learn how those involved in accidents compared with those not involved. The findings for the 810 drivers included comparisons of no accident, accident not responsible, and accident responsible drivers by age, weight, schooling, usual speed on the open road, drinking and smoking. All tabulations of results were controlled by sex and exposure or by miles driven because these factors were found to be associated with accidents.

With respect to driving, the accusation is often made that young people are high risks. However, when the distribution of Schenectady drivers by 10-year age groups was examined it was seen that few, if any, significant differences in accident status existed from young to old. In the low-exposure group, women in their sixties tended to have more accidents than women in their twenties or thirties. In the high-exposure group, the men having fewer accidents were in their sixties while those having more were in their forties. These differences were statistically significant, but all other differences were not.

With respect to weight, there were no significant differences and no consistent trends.

With respect to schooling, no consistent trends existed and only one difference was significant; in low-exposure a greater percentage of men



with college or graduate training were in the no-accident column than were men with training of eleventh grade or less.

With respect to speed, the one difference was found in the low-exposure group in that men who drove consistently at the 50-mile limit tended to be in the accident category more than those who drove under it.

With respect to drinking, several significant differences were found. Among low-exposure female drivers, those who drove occasionally after drinking had fewer accidents than those who did not drink or who did not drive after drinking. For women and men in the high-exposure group, the reverse was true, with those who drove occasionally after drinking having more accidents than those who did not drive after drinking.

With respect to smoking, there was only one significant difference. In the low-exposure category a smaller percentage of women smokers than nonsmokers were in the no-accident class; thus, women who smoked tended to have more accidents than women who did not smoke.

A second phase of the study was designed to test the hypothesis that the way people drive is associated with having accidents. The drivers were randomly selected and observed unknown to themselves as they drove around Schenectady. Acts of the drivers were judged as safe or unsafe; this was noted on a series of scales. It was found that age and sex did not seem to be related to driving behavior, nor did drivers committing unsafe acts seem to have any more accidents than those driving more safely.

This research indicated the importance of making future studies of male drivers separately from female drivers; of giving careful attention to measuring exposure; and of studying a random sample of drivers in a community so that variables may be observed as they actually operate. (Boek, J. K., Ph. D., Driver Behavior and Accidents: Am. J. Pub. Health, 47: 546-552, May 1957)

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### Acoustical Engineering Principles for Noise Reduction

In any industrial noise problem requiring remedial action, certain logical reasoning processes must be applied to define clearly the true nature of the problem and to analyze all possible approaches to it if satisfactory results are to be obtained. The haphazard application of acoustical engineering principles to noise problems may produce unexpected and often undesired results. With a clear analysis of the situation and a thorough understanding of how the corrective work will be judged, the most suitable engineering principles can be selected.

Noise is not usually a problem until someone objects to it. Any noise reduction program must be aimed at satisfying objectors, real or potential. The correct approach is to establish why the noise is a problem.

Industrial noises might be divided into two broad categories: (1) those that are annoying—probably extremely annoying—and (2) those which, in addition, are loud enough to be a real hazard to those continuously exposed to them. The annoyance factor and the general noise level can be reduced by reverberation control with acoustical treatment. However, it must be recognized that some industrial operations are by their very nature hazar-  
dously noisy and cannot be quieted. In such cases, the only solution is to furnish the worker with ear plugs or muffs designed to protect his hearing.

Noise problems are greatly diversified and complex with no two problems alike. In analyzing requirements to satisfy the major noise objectors, first consideration should be given to the noise source and how it can be reduced or controlled. Three general types of controls are: (1) control sound at its source—good maintenance program, undercoating, installation of guards and housing that are poor noise radiators, properly designed vibrator and shock mountings, and even rubber coatings to reduce metal-to-metal contact; (2) control structure-borne sound—specially designed housings with sound-absorption material, acoustically lined ducts and other full acoustical treatment of the noise generating area; and (3) control air-borne sound—installation of sound locks, reduction of reverberation interiors, construction of sound barricades and absorption traps. It may be that no one of these controls is the full answer to a specific problem; all three may be required.

The steps in noise control are summarized as follows:

1. Determine the real reason for the noise problem; who is the objector who must be satisfied?
2. Determine what it takes to satisfy him and how he will judge the results; aim corrections at him.
3. Consider the noise source and how to reduce it.
4. Look for a way to isolate or segregate it.
5. Reduce the annoyance factor and the general noise level by reverberation control with acoustical treatment.

(Rees, W. M., *Acoustical Engineering Principles for Noise Reduction: Noise Control*, 3: 59-84, March 1957)

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#### Isoniazid After Five Years of Clinical Experience

The marked symptomatic benefit noticed and resulting conspicuous exuberance displayed by many of the patients first to receive the isonicotinic acid hydrazides followed more often from iproniazid than from isoniazid. Because of its lower toxicity and its equal—or nearly equal—objective benefit, isoniazid has virtually displaced the isopropyl derivative. Its less dramatic and perhaps somewhat slower effect caused some disappointment



when isoniazid became generally available. An even more disturbing factor, however, was the in vitro demonstration of relatively early increased bacterial resistance in successive cultures of sputum. It was then expected by many clinicians and microbiologists that in vitro resistance and loss of therapeutic effect would be as closely correlated as had been the case with streptomycin. Shortly after the introduction of streptomycin, such correlations had been conclusively demonstrated and the levels of significant resistance could be clearly—if perhaps not critically—defined.

Early reports of isoniazid treatment in pulmonary tuberculosis suggested that similarly close correlations were to be found and that isoniazid might lose clinical efficacy even more rapidly than streptomycin. However, these reports were not conclusive and have not been confirmed more recently. From the beginning, a more consistently favorable clinical course was observed in isoniazid-treated military tuberculosis than had been seen with streptomycin. Relapse of this acute generalized form under isoniazid treatment was reported early to be rare—in contrast to streptomycin. Subsequent experience has confirmed the correctness of these early observations. The superiority of isoniazid over streptomycin in this respect has a bearing on the problem of bacterial resistance which was overlooked by many at the time, but which in the first year of isoniazid experience foretold what has lately become increasingly apparent that bacterial resistance to isoniazid is a factor of relatively small clinical importance.

The present situation is summed up in a report on a careful study of 234 patients with pulmonary tuberculosis which showed no clinical disadvantages due to isoniazid resistance, but indicated the emergence of isoniazid-resistant organisms in the sputum only with the extent of initial cavitation. Clinicians have found not only a lack of correlation between clinical progress and in vitro susceptibility tests, but an absolute incidence of clinical deterioration under long-term isoniazid treatment which is not significantly higher than with two-drug regimens under which the emergence of in vitro resistance is demonstrably reduced.

As yet, it is difficult to fully assess the effect of isoniazid on the general tuberculosis mortality because prior to its introduction this was already sharply declining, particularly since the start of the antimicrobial era. Isoniazid has, however, without question changed the results in military and meningeal tuberculosis from mediocre to good. This is in part due merely to the better diffusion of isoniazid into the central nervous system. Most probably it is due also to other factors, particularly the lower inactivation of isoniazid in vivo by bacterial drug resistance than occurs with streptomycin. If this is true, it may be expected that a further impetus attributable specifically to isoniazid on the declining mortality and morbidity of tuberculosis will become clearly detectable as the statistics of successive years accumulate. The suppressive effect on the spread of the disease may be greater than can yet be appreciated.

It appears at the end of five years that isoniazid has attained predominant importance in the therapy of tuberculosis and that it has fulfilled its early promise to any who viewed this realistically. (Editorial. Muschenheim, C., Isoniazid After Five Years: Arch. Int. Med., 99: 673-677, May 1957)

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Tuberculosis Pleurisy with Effusion and  
Subsequent Tuberculosis Relapse

In 1951, it was recommended on the basis of the Veterans Administration-Armed Forces study of the therapy of tuberculosis that all cases of primary tuberculous pleurisy with effusion (idiopathic pleurisy with effusion) be treated with antimicrobial therapy as well as by sanatorium care. Recognizing that pleurisy with effusion represents tuberculosis with a high rate of subsequent relapse, it was believed that every effort should be made to reduce it. A report of the results of the cooperative study to January 1, 1956 follows:

In addition to the treated series, it was also possible to obtain information on a series of cases in which antimicrobial therapy had not been used. The series for comparison comprise 382 patients who received various periods of chemotherapy and 209 patients who received no chemotherapy. All patients in both series were hospitalized. However, the treated and untreated series were not concurrent in time nor was there randomization in selection for chemotherapy against untreated controls.

The criteria established for selection of cases were:

1. The effusion should be of recent origin, preferably not extending over 60 days.
2. The tuberculin skin reaction should be definitely positive before or during treatment.
3. Tubercle bacilli should, when possible, be demonstrated in the aspirated fluid by culture or guinea pig inoculation, either at the beginning of therapy or subsequent to it.

Prior to treatment, every effort should be made to exclude a nontuberculous etiology of the effusion.

Patients having a demonstrable parenchymal lesion at the onset of the effusion were excluded from the study.

Background factors in both series were remarkably similar. Approximately half of the patients in each series were less than 30 years of age, 95% in each series were males and approximately two-thirds of each group were white. The two sides of the chest were equally affected in each group. None of the patients in either group had roentgenographic evidence of intrapulmonary lesions at the beginning of hospital treatment.

Antimicrobial therapy was not uniform as to the agents used or the duration of therapy. Sixteen patients received chemotherapy for less than



4 months, chiefly streptomycin alone. However, more than half the patients received chemotherapy for 6 months or more with various combinations of antimicrobial agents.

The total rate of tuberculous complications excluding recurrent effusion was 19% in the untreated group and 4% in the group which received chemotherapy. Pulmonary tuberculosis was the most frequent complication in each group and skeletal tuberculosis was the most frequent extrapulmonary complication.

Two deaths were attributable to a tuberculous relapse, both occurring in the group which did not receive chemotherapy. One death occurred in a patient who developed miliary and meningeal tuberculosis 27 months after the onset of the effusion; the other followed the diagnosis of far advanced pulmonary tuberculosis in a patient 26 months after onset of the effusion.

Recurrent pleural effusion was reported in 5 of the treated group and in 11 of the untreated series. Of the 16 recurrences, there were 7 on the same side as the initial effusion, 8 on the contralateral side, and 1 bilateral recurrent.

EFFECT OF CHEMOTHERAPEUTIC REGIMENS UPON THE  
INCIDENCE OF TUBERCULOUS COMPLICATIONS IN THE  
TREATMENT OF PLEURAL EFFUSION

Regimen	Number Treated	Number of Complications	Percent
Streptomycin only	12	3	25.0
Streptomycin-PAS	250	11	4.4
Isoniazid-streptomycin or isoniazid-PAS	120	3	2.5

The incidence of complications related to various background factors suggests an apparently lower incidence of extrapulmonary complications in the untreated group, a higher rate of complications among the non-whites who received chemotherapy, and a lower incidence of recurrent effusions in the treated group. None of these comparisons is statistically significant.

The incidence of complications related to the antimicrobial agents used was highest among those treated with streptomycin alone. Most of these patients received chemotherapy for less than 4 months. The lowest

incidence is among those who were treated with drug combinations employing isoniazid; also, no reported extrapulmonary complications were in this group.

The average length of hospitalization for treatment of the effusion among those who developed tuberculous complications was 5 months for those receiving no chemotherapy and 6 months for those who did. Of this group, 75% developed tuberculous complications while still in the hospital and on chemotherapy. More than half the complications occurred within the first 6 months of hospital treatment. The majority of relapses in both series occurred in those cases in which the pleural fluid bacteriologic findings had been negative. This is highly significant and further substantiates the necessity for a firm diagnosis on clinical grounds.

The estimated rate (life table method) for all tuberculous complications at the end of 4 years of observation was 9% in the treated group compared with 25% in the untreated group. A similar analysis for the complication of pulmonary tuberculosis alone indicated a rate of 7% and 21% respectively. The estimated complication rate for the treated cases did not increase after 30 months, but did continue to increase for the untreated cases.

The rate of initial bilateral effusion in both the treated and untreated series was the same. However, the rate of complication was 57% among the patients with bilateral effusion in the untreated series and confirms the clinical impression of the higher morbidity associated with this finding. The rate of complication in the treated group of bilateral effusion was 6%.

Certain statistical defects exist in these data, primarily, in the non-randomization of cases, the lack of concurrence in time of the two series, the varying regimens of chemotherapy and duration of therapy, and the possibility of incomplete reporting of cases. The relapse rate of series of patients treated prior to the introduction of the antimicrobial drugs is usually estimated at 35% and has varied from 20 to 65% in reports for the 5 years following onset of the pleural effusion. These data and subsequent reports from the continuing study should offer information of value in estimating the results of chemotherapy in reducing the incidence of tuberculous relapse. (Tuberculosis Abstracts, National Tuberculosis Association, XXX, May 1957; Falk, A., Stead, W. W., Antimicrobial Therapy in the Treatment of Primary Tuberculosis Pleurisy with Effusion: Its Effect upon the Incidence of Subsequent Tuberculosis Relapse: Am. Rev. Tuberc., 74: 897-902, December 1956)

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The Changing Distribution of Helminthic  
Diseases in the United States

Parasitism as a way of life is present throughout the vegetable and animal kingdoms. The symptoms produced by parasites vary from none to fulminating, resulting in death. This variability depends on many factors usually summed up by the phrase "virulence of the organism and resistance of the individual" which conceals much lack of knowledge. A truly successful parasite develops a state of equilibrium with its host and does it no harm because the life of the host is essential for the life of the parasite. When the parasites become too numerous this balance is disturbed and disease of the host is the result.

There is reason to suspect that some parasitic and tropical diseases are on the increase. Toxoplasmosis has spread in recent years. Isospora belli made its initial appearance in Florida in 1955. Capillaria hepatica was diagnosed in Maryland for the first time in 1954. During 1955, the first patient with American trypanosomiasis (Chagas' disease) in the United States was reported in Texas. The number of cases of trichinosis in the United States exceeds that in any other country in the world. Relapsing fever exists in Texas.

Vigorous attacks should be made against these enemies which continue in their cycles of destruction. The United States and other scientifically advanced and sanitation-conscious countries have the necessary laboratory facilities, but medical men seldom think of examining for parasites. Diagnosis of most parasitic diseases can be made by simple laboratory procedures, performed by experienced examiners.

A clear picture of the present parasitological problems may be of interest. At present, parasitism presents a serious social situation in the United States and the rest of the world. Concept and teachings of parasitology are constantly changing. During wars, it is emphasized; during interwar periods, it is forgotten. The presence or absence of parasites is determined more by the sanitary facilities of a country and the hygiene of its citizens than by the climate. Personal cleanliness (body bathing) has little influence on these conditions. Some reasons why parasites have become more numerous in the northern cities of the United States are:

Migration from Endemic Areas. Large numbers of persons continue to migrate to northern cities every month from southern and Caribbean endemic areas. The migrants bring with them their cultural and eating habits. Because parasites have no race preference, an unknown number of parasites are also transported even though great progress has been made in sanitation throughout the Southern States and Caribbean areas. Yellow fever has been eliminated and malaria is almost an entity of the past, but the protozoa, roundworms, and flukes still flourish.

Travel and Work in Endemic Areas. The short time required for air travel is within the incubation period of most infectious diseases, including malaria, kala-azar, pappataci (sand-fly) fever, dengue, yellow fever,

rickettsial infection, and bacillary and amebic dysentery. Since World War II, over two million Americans have travelled outside the United States.

Formerly, the most common pathogenic intestinal parasites found in persons in the northern cities were Entamoeba histolytica, Giardia lamblia, and Enterobius vermicularis. Now Ascaris lumbricoides, Ancylostoma duodenale, and Trichuris trichiura from the southern states are added. To a lesser extent, Schistosoma mansoni and Wuchereria bancrofti from endemic areas are added as well as other parasites from all over the world. Since about 1950, parasites have become more abundant and some hitherto unfamiliar parasites have appeared. At times, in spite of flush toilets and sanitation, there are small outbreaks of cases of infestation with unusual parasites.

Worms do not have the universal appeal and journalistic value of great viral and bacterial epidemics. Humans consider the subject unsympathetically and recoil at the thought of harboring worms. The helminths have resisted destruction and have persisted and multiplied since the beginning of time. This is a tribute to their biological efficiency.

Parasitism is allowed to persist because of lack of knowledge, lack of interest, poor diagnosis, and failure to realize the extent of misery caused by parasites. The application of present knowledge could eradicate most parasites, just as malaria and yellow fever were eliminated, if interest were taken, known facts applied, treatment given, and preventive measures adopted. The spread of parasites depends more on sanitation and hygiene than on climate. If the rules of sanitation and hygiene are followed, these parasites are not likely to become endemic. Birch, D. L., Anast, B. P., The Changing Distribution of Helminthic Diseases in the U. S. : J. A. M. A., 64:121-126, May 11, 1957)

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